

# **PROGRESS IN MANAGEMENT ACCOUNTING RESEARCH AND ZIMMERMAN'S CONJECTURES (2001): WHERE ARE WE NOW?**

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## **ABSTRACT**

This paper aims to follow up on the progress of the case study-based management accounting research since Zimmerman (2001) published his work "Conjectures regarding management accounting research". Zimmerman critiqued the lack of progress in case study-based research until the year 2001. Accordingly, this paper rejoins the progress of this body of research to date. A total of 57 direct citations of Zimmerman's (2001) work were analyzed using three statistical techniques: hypothesis testing (test of proportions), inter-rater agreement analysis, and Cohen's Kappa test of reliability. The statistical tests confirmed three hypotheses and rejected three others. The major finding shows that case study-based management accounting research has been evolving since 2001 in some areas and has remained in the same state as reported by Zimmerman in others (2001). More management accounting researchers should pursue case study-based management accounting research, so that a critical mass of researchers can be developed to advance the current body of knowledge in case study-based management accounting research. The results from the analyses in this paper contribute to our understanding of the roles of practitioners and researchers in advancing case study-based management accounting research since Zimmerman's (2001) review.

**Keywords:** conjectures, management accounting research, inter-rater agreement, direct citation analysis, Cohen's Kappa.

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## INTRODUCTION

In 2001, Zimmerman published an account of the status of management accounting research. His account updated the status originating from the colloquium of 1986 held at Harvard Business School on case study-based research. In his account, he referred to the work of Ittner and Larker (2001). Zimmerman (2001) reported the status of management accounting research from his observations on publications in North American journals. He offered a number of reasons (as conjectures) for the lack of progress of management accounting research since 1986: lack of data, inclination to conduct descriptive research, incentives to emphasize practice-based descriptive research, lack of researchers using non-economics theory, lack of researchers applying a holistic research framework (theory/model and building/model testing), and lack of research beyond decision making. Since then, only 61 studies have cited Zimmerman's work (sourced from the Scopus database) and they are as follows:

1. Abdel-Kader, M. G. & Luther, R. (2004). *An empirical investigation of the evolution of management accounting practices*. Department of Accounting, Finance and Management.
2. Ahrens, T., Becker, A., Burns, J., Chapman, C. S., Granlund, M., Habersam, M., Hansen, A., Khalifa, R., Malmi, T. & Mennicken, A. (2008). The future of interpretive accounting research-A polyphonic debate. *Critical Perspectives on Accounting*, 19; 840-866.
3. Bai, G. & Krishnan, R. (2012). Role of Management Accounting Systems in the Development and Efficacy of Transactive Memory Systems. *Journal of Management Accounting Research*, 24; 201-220.
4. Baldvinsdottir, G., Mitchell, F. & Nørreklit, H. (2010). Issues in the relationship between theory and practice in management accounting. *Management Accounting Research*, 21; 79-82.
5. Baxter, J. & Chua, W. F. (2008). The field researcher as author-writer. *Qualitative Research in Accounting & Management*, 5; 101-121.
6. Bhimani, A. (2002). European management accounting research: traditions in the making. *European Accounting Review*, 11; 99-117.

7. Brown, R. & Brignall, S. (2007). Reflections on the use of a dual-methodology research design to evaluate accounting and management practice in UK university central administrative services. *Management Accounting Research*, 18; 32-48.
8. Burkert, M. & Lueg, R. (2013). Differences in the sophistication of Value-based Management – The role of top executives. *Management Accounting Research*, 24; 3-22.
9. Cassar, G. (2009). Financial statement and projection preparation in start-up ventures. *The Accounting Review*, 84; 27-51.
10. Cassar, G. & Gibson, B. (2008). Budgets, Internal Reports, and Manager Forecast Accuracy\*. *Contemporary Accounting Research*, 25; 707-738.
11. Chenhall, R. H. (2012). Developing an Organizational Perspective to Management Accounting. *Journal of Management Accounting Research*, 24; 65-76.
12. Chenhall, R. H. & Smith, D. (2011). A review of Australian management accounting research: 1980-2009. *Accounting & Finance*, 51; 173-206.
13. Collin, S.O. Y., Tagesson, T., Andersson, A., Cato, J. & Hansson, K. (2009). Explaining the choice of accounting standards in municipal corporations: Positive accounting theory and institutional theory as competitive or concurrent theories. *Critical Perspectives on Accounting*, 20; 141-174.
14. Collin, S.O. Y., Tagesson, T., Andersson, A., Cato, J. & Hansson, K. (2009). Explaining the choice of accounting standards in municipal corporations: Positive accounting theory and institutional theory as competitive or concurrent theories. *Critical Perspectives on Accounting*, 20; 141-174.
15. Eierle, B. & Schultze, W. (2013). The role of management as a user of accounting information: implications for standard setting. *Journal of Accounting and Management Information Systems*, 12; 155-189.

16. Endenich, C., Brandau, M. & Hoffjan, A. (2011). Two Decades of Research on Comparative Management Accounting—Achievements and Future Directions. *Australian Accounting Review*, 21; 365-382.
17. Frezatti, F. (2007). The “economic paradigm” in management accounting: Return on equity and the use of various management accounting artifacts in a Brazilian context. *Managerial Auditing Journal*, 22; 514-532.
18. Hansen, A. (2011). Relating performative and ostensive management accounting research: Reflections on case study methodology. *Qualitative Research in Accounting & Management*, 8; 108-138.
19. Hansen, S. C., Otley, D. T. & Wim, A. V. d. S. (2003). Practice Developments in Budgeting: An Overview and Research Perspective. *Journal of Management Accounting Research*, 15; 95-116.
20. Heck, J. L. & Jensen, R. E. (2007). An analysis of the evolution of research contributions by the Accounting Review, 1926-2005. *The Accounting Historians Journal*; 109-141.
21. Hemmer, T. & Labro, E. (2008). On the optimal relation between the properties of managerial and financial reporting systems. *Journal of Accounting Research*, 46; 1209-1240.
22. Hopwood, A. (2002). ‘If only there were simple solutions, but there aren’t’: some reflections on Zimmerman’s critique of empirical management accounting research. *European Accounting Review*, 11; 777-785.
23. Ittner, C. & Larcker, D. (2002). Empirical managerial accounting research: are we just describing management consulting practice? *European Accounting Review*, 11; 787-794.
24. Kaplan, R. S. (2006). The competitive advantage of management accounting. *Journal of Management Accounting Research*, 18; 127-135.

25. Locke, J. & Lowe, A. (2008). Evidence and implications of multiple paradigms in accounting knowledge production. *European Accounting Review*, 17; 161-191.
26. Luft, J. & Shields, M. (2002). Zimmerman's contentious conjectures: describing the present and prescribing the future of empirical management accounting research. *European Accounting Review*, 11; 795-803.
27. Lukka, K. (2004). How do accounting research journals function? Reflections from the inside. *The real life guide to accounting research*; 433-447.
28. Lukka, K. (2010). The roles and effects of paradigms in accounting research. *Management Accounting Research*, 21; 110-115.
29. Lukka, K. & Mouritsen, J. (2002). Homogeneity or heterogeneity of research in management accounting? *European Accounting Review*, 11; 805-811.
30. Malmi, T. (2010). Reflections on paradigms in action in accounting research. *Management Accounting Research*, 21; 121-123.
31. Malmi, T. & (Brown), D. A. 2008. Management control systems as a package—Opportunities, challenges and research directions. *Management Accounting Research*, 19; 287-300.
32. Mensah, Y. M., Nen-Chen Richard, H. & Wu, D. (2004). Does Managerial Accounting Research Contribute to Related Disciplines? An Examination Using Citation Analysis. *Journal of Management Accounting Research*, 16;163-181.
33. Merchant, K. A. (2010). Paradigms in accounting research: A view from North America. *Management Accounting Research*, 21; 116-120.
34. Modell, S. (2009). Bundling management control innovations: a field study of organisational experimenting with total quality management and the balanced scorecard. *Accounting, Auditing & Accountability Journal*, 22; 59-90.

35. Modell, S. (2009). In defence of triangulation: A critical realist approach to mixed methods research in management accounting. *Management Accounting Research*, 20; 208-221.
36. Modell, S. (2010). Bridging the paradigm divide in management accounting research: The role of mixed methods approaches. *Management Accounting Research*, 21; 124-129.
37. Moehrle, S., Anderson, K., Ayres, F., Bolt-Lee, C., Debreceeny, R., Dugan, M., Hogan, C., Maher, M. & Plummer, E. (2009). The impact of academic accounting research on professional practice: An analysis by the AAA Research Impact Task Force. *Accounting Horizons*, 23; 411-456.
38. O'Connell, V. (2006). The impact of accounting conservatism on the compensation relevance of UK earnings. *European Accounting Review*, 15; 627-649.
39. O'Connell, V. (2007). Reflections on stewardship reporting. *Accounting Horizons*, 21; 215-227.
40. Otley, D. (2003). Management control and performance management: whence and whither? *The British Accounting Review*, 35; 309-326.
41. Parker, L. D. (2012). Qualitative management accounting research: assessing deliverables and relevance. *Critical Perspectives on Accounting*, 23; 54-70.
42. Poletti Hughes, J. (2009). Corporate value, ultimate control and law protection for investors in Western Europe. *Management Accounting Research*, 20; 41-52.
43. Ryan, H. E. & Trahan, E. A. (2007). Corporate Financial Control Mechanisms and Firm Performance: The Case of Value-Based Management Systems. *Journal of Business Finance & Accounting*, 34; 111-138.

44. Stringer, C. (2007). Empirical performance management research: observations from AOS and MAR. *Qualitative Research in Accounting & Management*, 4; 92-114.
45. Sunder, S. (2002). Management control, expectations, common knowledge, and culture. *Journal of Management Accounting Research*, 14; 173-187.
46. Taipaleenmaki, J. & Ikaheimo, S. (2009). On the convergence of financial accounting and management accounting. *Available at SSRN 1394373*.
47. Tessier, S. & Otley, D. (2012). A conceptual development of Simons' Levers of Control framework. *Management Accounting Research*, 23; 171-185.
48. Tessier, S. & Otley, D. (2012). From management controls to the management of controls. *Accounting, Auditing & Accountability Journal*, 25; 776-805.
49. Van Helden, G. J. & Northcott, D. (2010). Examining the practical relevance of public sector management accounting research. *Financial Accountability & Management*, 26; 213-240.
50. Van Lent, L. (2007). Endogeneity in management accounting research: A comment. *European Accounting Review*, 16; 197-205.
51. Wagenhofer, A. (2006). Management Accounting Research in German-Speaking Countries. *Journal of Management Accounting Research*, 18; 1-19.
52. Waymire, G. B. (2009). Exchange guidance is the fundamental demand for accounting. *The Accounting Review*, 84; 53-62.
53. Weißenberger, B. E. & Angelkort, H. (2011). Integration of financial and management accounting systems: the mediating influence of a consistent financial language on controllership effectiveness. *Management Accounting Research*, 22; 160-180.

The work of Zimmerman was criticized by many researchers for the lack of depth of analysis and for the bias toward the North American tradition of management accounting research and publications (Lukka, 2002, Brown and Brignall, 2007, Bhimani, 2002, Hopwood, 2002, Locke and Lowe, 2008). However, the criticisms are sparse and not focused on any systematic investigation of the progress of management accounting research to date.

Since Zimmerman's work was published, a number of authors have published research predominantly in management accounting areas. Some of these studies are in the theoretical areas (see e.g., Tessier and Otley, 2012b, Van Der Meer-Kooistra and Vosselman, 2012, Chenhall, 2012, Hansen, 2011). Other researchers have attempted to refine methodological approaches and discussed organizational practices (see e.g., Burkert and Lueg, 2013, Hemmer and Labro, 2008, Abdel-Kader and Luther, 2006). To our knowledge, no research has been conducted on the status of management accounting since 2001. We attempt to rejoin Zimmerman's (2001) work in this paper. Therefore, our key research question is as follows: *Has management accounting research progressed significantly since the publishing of Zimmerman's (2001) account in North America?*

To examine the key research question, we used citation analysis and rating by two independent researchers with backgrounds in management accounting research and management research. We independently rated the citations of Zimmerman's six conjectures. We then used three statistical tests, namely, test of proportions, inter-rater agreement, and Cohen's Kappa (see e.g., Berry and Mielke, 1988; Warrens, 2010), to strengthen the validity and reliability of our conclusions. We found support for three conjectures and for the other three conjectures. We reached the overall conclusion that management accounting research has progressed in some areas but not in others since 2001. The main contribution of our study is that we extended Zimmerman's (2001) work and added to the growing body of research on the progress of management accounting as a discipline and as a systematic body of knowledge.

The remainder of our paper is organized as follows. The next section reviews Zimmerman's work as a framework and develops our hypotheses. The subsequent section describes the research design. The fourth section

reports the procedures, and the fifth section discusses results. The last section presents the conclusions, limitations, and directions for further research.

## **LITERATURE AND HYPOTHESIS DEVELOPMENT**

This section applies the work of Zimmerman (2001) as a framework to weigh the theoretical and empirical literature directly related or influenced by Zimmerman. In extracting the relevant literature, the Scopus database is used, and 61 cited papers are examined. We assume that the papers citing Zimmerman's (2001) work are motivated by Zimmerman's observations about the progress of management accounting research to date. We develop six hypotheses to test the progress of management accounting research.

### **Conjecture One: Poor Data**

Researchers have claimed that the unavailability of data accounted for the insufficient research in management accounting required to develop good theories. The reasons advanced for this conjecture are a greater inclination to perform research in capital markets, executive compensation and tax, problems with surveys, response bias and surveyor bias such as site selection being purposive rather than random, and data from sites that are proprietary and cannot be replicated. Zimmerman (2001) argued that economists have overcome this poor data excuse by using available data from different sources. Zimmerman (2001) rejected the claims that the result of poor data leading to "poor theory" or "no theory" is due to rejections by journal editors from good North American journals. He made counter-arguments that the papers were published in North American journals.

Since 2001, advances in information technology, data archiving systems, and the availability of professional data services have meant that management accounting researchers are no longer constrained by data limitations. Therefore, management accounting researchers are expected to have overcome data availability problems and to have published more scholarly work in academic and professional outlets. Therefore, the following hypothesis in alternative form is developed:

$H_A$ : Management accounting research has progressed despite the availability of poor data.

## **Conjecture Two: Atheoretical Approach**

Zimmerman's second conjecture suggests that researchers should develop theory from contemporary organizational practices. This type of theory building resembles grounded theory approaches (Corbin and Strauss, 1990, Locke, 2001). The starting point of this suggestion is based on the observed inclination of researchers to use hypothesis testing or model building. Zimmerman (2001) argued that hypothesis testing or model building requires a sound theoretical base. Management accounting lacks the status of a well-developed discipline with ample theories and a systematic body of knowledge. Zimmerman (2001) claimed that things had changed over the past 15 years as many descriptive studies had been reported. However, these studies were not good enough to build or test theory. The plausible reasons for this phenomenon include not enough case studies, poor quality of case studies, and lack of appeal for inductive and descriptive research for theory building or testing. Zimmerman argued that descriptive papers reporting unknown organizational realities could be useful.

In advancing management accounting research, a departure from futile attempts to test theory or build models based on weak theories and practices is imperative. Researchers are expected to have addressed these shortcomings, and the discipline of management accounting is expected to have more research on conceptual and theoretical developments. By 2013, more developments were geared toward increasing the body of knowledge in management accounting. Therefore, the following hypothesis in alternative form is developed:

H<sub>A</sub>: Management accounting research is still atheoretical (descriptive).

## **Conjecture Three: Research Incentives**

The third conjecture reports the incentives of researchers, business schools, and practitioners in engaging in the types of research they are interested in and a shift in research incentives from theoretical to practice-based research. The argument states that business schools, the profession, and students in general value practice-based research more than theoretical research. Some of the reasons for this phenomenon are citation rates (*Business Week*, *Wall Street Journal*, and scholarly journals), faculty

community consulting, perceptions of students, media and press coverage, and perceptions of the business community. Management accounting researchers have greater incentives to engage in descriptive research because of a shift in emphasis to the stakeholders of the research. Other factors are associated with the slow progress of management accounting research, such as the need to inform practitioners (Demski and Zimmerman, 2000) and the need to validate consultants' claims to new management methods (Zimmerman, 2001).

Zimmerman (2001) mainly referred to the research conducted by North American researchers. Although economic reasons are used for engaging in research, other reasons are equally important for the advancement of a discipline. A departure from practice-based research to theory-led or analytical research, conceptual research, or even valuable opinion pieces of the successful owners of large organizations such as Apple and Dell, has the potential to add to the growing needs of the emerging discipline of management accounting. Therefore, since 2001, researchers have been expected to devote their efforts to research in areas other than pure practice. Therefore, the following hypothesis in alternative form is developed:

H<sub>A</sub>: Management accounting researchers have incentives to engage in research outside the scope of descriptive research.

#### **Conjecture Four: Non-economic-based Framework**

The fourth conjecture claims economics as a primary discipline that informs research in accounting and other social sciences (Lazear, 2000) (cited in Zimmerman, 2001). Zimmerman (2001) contended that although cognitive psychology has a significant potential as a framework for the development of accounting theory, innovative accounting research over the last 40 years has mainly relied on economic theories. Alternative explanations for this phenomenon are the strength of economics as a discipline and the lack of a critical mass of researchers trained in other areas of social sciences. The other speculation is that although economics-based hypotheses are more productive in furthering knowledge, the use of other non-economics-based frameworks (e.g., contingency theory and expectancy theory) is retarding the development of managerial accounting knowledge.

Management accounting borrows many theories and concepts from other disciplines. Birnberg, Luft, and Shield (2006) reviewed and found some notable developments in management accounting research based on psychological theories. By now, management accounting researchers should have developed some expectations showing that they would have to explore theories in disciplines other than economics. Unless this phenomenon occurs, management accounting as a discipline will not progress. Therefore, progress is expected in the direction of more research using non-economics-based frameworks. The following hypothesis in alternative form is developed:

H<sub>A</sub>: Management accounting research is only dependent on economics-based theories.

### **Conjecture Five: Few Empirically Testable Theories**

The fifth conjecture claims that management accounting as a discipline has not advanced because of a lack of testable models from rigorous theories. He contended that researchers, who bring new ideas despite their efforts to discuss the empirical implications of their theories, rarely test them. Most managerial accounting papers lack testable empirical prediction sections. The implicit assumption states that theorists only develop theories, but empiricists test them. Zimmerman (2001) argued that researchers who develop models with testable predictions and discuss the implications of their models are beneficial.

Although their ideas may be novel, researchers may lack sufficient justification to perform everything on their own. A possible reason for this phenomenon could be the word limit set by journals. Another could be the time it takes to complete a paper that encompasses theory, model, and empirical data to test the model. With the availability of online journals over the last decade, researchers may not be constrained by word limit now. Therefore, as with researchers in other disciplines, management accounting researchers are expected to write longer papers than they used to 10 years ago. Therefore, the following hypothesis in alternative form is developed:

H<sub>A</sub>: Theory development, model building, and model testing are performed by the same researcher.

## **Conjecture Six: Emphasis on Decision Making and Not on Control**

The sixth conjecture claims that empirical academic and practice-based research on managerial accounting puts excessive emphasis on decision making. He provided some examples of popular decision-making practices, including activity-based costing (ABC), balanced scorecards, total quality management (TQM), and others, that he believed to be decision focused. However, some of these decision tools, such as ABC, can also be used for control. Employees and managers' interests are explored in a decision-making context as well. Most innovative techniques align employee and shareholder interests. They want to be equal members of decision-making teams. Examining the relative importance of decision making and control is difficult. Some plausible explanations for the emphasis on control, instead of on decision-making, include negative perceptions about accounting and accountants and the popularity of decision-making research. With these trends, researchers enter the field pre-occupied with the notion that they will find decision-making issues more than control issues. If explored issues relate more to control than to decision making, then the examination of the issues guided by decision-making theories will lead to misguided results (Zimmerman, 2001).

Although the argument that management accounting research is decision focused is valid, organizational practices are mainly decision focused. On the one hand, the prevalence of decision-making tools is more valued by employees and managers in organizations. For example, Brierley (2008) observed that ABC was popular because of its wider understanding and acceptability among employees. On the other hand, control tools are used by the senior management and may not be as frequently used as decision-making tools. Zimmerman (2001) argued that at equilibrium, organizations do not use control very often, and they only do so when deviations occur from the established norms and rules. Information about the use of control may be commercially sensitive proprietary information and is therefore difficult to access because of the nature of the use of *control tools*. The following hypothesis in alternative form is developed:

H<sub>A</sub>: Management accounting researchers are occupied with management decision-focused research.

## RESEARCH DESIGN

### Data

Data for this research were sourced from the Scopus database following the publication of Zimmerman's paper in 2001. Therefore, the data constitute 12 years of research in management accounting (2001-2013) directly motivated by the work of Zimmerman (2001). We measured direct motivation by the direct citation of Zimmerman's (2001) work. A total of 61 papers cited Zimmerman's (2001) work, and thus our sample size was 61 ( $n = 61$ ). As Scopus is widely available to researchers, we relied on this database as our data source. We did not find four articles, so these four papers were excluded from our sample. Therefore, 57 ( $n = 57$  or 93.44%) useable papers formed our dataset. A sample size of 30 or more is large enough to conduct any statistical analysis.

### Procedure

We used three tools to analyze the data. We coded the articles by Zimmerman's six conjectures following the abstract classification format of *Accounting, Accountability, and Auditing Journal (AAAJ)*. The themes of the papers were then classified as either of the categorical responses of "yes" (was met) or "no" (was not met). In total, the useable articles generated 342 categorical responses ( $57 \times 6$  matrixes) for our statistical analyses. We discussed the rating procedures among ourselves before independently grading the themes of the papers. The first rater (the current researcher) has a background in management accounting research, and the other rater has a background in the management discipline. We rated each paper against the conjectures independently.

To test the hypotheses, we applied a *test of proportions* using a two-tailed z-test. As we had independently rated the cited works, a test of proportions was expected to accept or reject the hypothesized conjectures. The results of this test statistics are summarized in Table 1.

**Table 1: Z-Scores of All Hypotheses**

Conjectures	Inter-rater response categories		Percentage	
	Calculated z-value	Calculated p value	Null accepted/rejected	Level of significance
Conjecture one	-5.0900	0.00000	Null rejected	5% (two-tailed test)*
Conjecture two	-1.9742	0.04884	Null rejected	5% (two-tailed test)*
Conjecture three	1.0106	0.31250	Null accepted	5% (two-tailed test)*
Conjecture four	1.3223	0.18684	Null accepted	5% (two-tailed test)*
Conjecture five	-0.6819	0.49650	Null accepted	5% (two-tailed test)*
Conjecture six	2.6967	0.00694	Null rejected	5% (two-tailed test)*

\*In a two-tailed test, the critical z-value is +/-1.96

We used two additional tests to assess the validity and reliability of the results obtained from our analysis. To test the validity, we used crosstabs and a simple frequency distribution to check the agreement of scores between the raters. The results of the crosstabs are summarized in Table 2.

**Table 2: Inter-rater Agreement Validity Test**

Conjectures	Inter-rater response categories		Percentage	
	Agreement (yes)	Disagreement (no)	% agreement	% disagreement
Conjecture one	28	29	49.1	50.9
Conjecture two	31	26	54.4	45.6
Conjecture three	33	24	57.9	42.1
Conjecture four	48	9	84.2	15.8
Conjecture five	38	19	66.7	33.3
Conjecture six	33	24	57.9	42.1

To establish the reliability of our analysis, we conducted a two-rater reliability analysis using Cohen’s Kappa (k) (Cohen, 1960). Cohen’s Kappa tests the reliability of the ratings by the two raters (Sim and Wright, 2005). The results of our analysis are presented in Table 3.

**Table 3: Cohen’s Kappa Test of Reliability**

Conjectures	Crosstab of the categorical responses*		Percentage	
	Agreement (yes)	Disagreement (no)	Kappa value	Significance
Conjecture one	5	25	0.066	0.374
Conjecture two	17	18	0.179	0.131
Conjecture three	10	25	0.097	0.445
Conjecture four	3	55	0.452	0.000
Conjecture five	6	37	0.209	0.097
Conjecture six	4	33	0.032	0.777

\*Agreement or disagreement of both raters

## RESULTS AND DISCUSSION

We explored the advancement of management accounting research following the publication of Zimmerman’s (2001) work. We used the subjective judgments of two raters to rate the papers as having met (“yes”) or failed (“no”) to meet the criteria of Zimmerman’s six conjectures. We used statistical tests of hypothesis (two-tailed) to accept or reject the hypotheses. In each hypothesis, the proportions of agreements and disagreements were tested using a z-test. The null hypothesis is accepted when the difference in proportions between the raters is not significant (the two proportions are almost equal). The null hypothesis is rejected when the differences in proportions are significantly different (at any level of significance). However, we did not consider that hypothesis testing was sufficient to accept or reject our hypotheses. In inductive judgments involving two independent raters, additional tests of validity and reliability are required because the population proportion test considers a count of proportions of responses independently. When rating, a one-to-one correspondence (inter-judge subject agreement or disagreement) and the total counts of agreements and disagreements of each subject are required to establish validity. Thus, for a wider acceptability of the results, we used Cohen’s Kappa test (Cohen, 1960) to reinforce our findings and conclusions.

Our results in Tables 1 to 3 are mixed. In our first conjecture, we investigated the current state of management accounting following Zimmerman (2001). Our test of proportion reveals that the null hypothesis

is rejected at the 5% level of significance. The inter-rater agreement reveals agreements in 28 cases (49.1%) between the raters. Therefore, both tests suggest that management accounting research has advanced significantly since 2001. However, our test of reliability, Cohen's Kappa, is not promising, as it is only 0.066. This value means that this result is somehow valid, although the raters did not agree in most cases.

The test of proportion for our second conjecture rejected the null hypothesis at the 5% level of significance (it could be accepted at the 10% level of significance). A further test of inter-rater agreement suggests that the raters agreed on 31 cases (54.4%). Taken together, both tests suggest that management accounting researchers engage in research other than describing organizational practices (or atheoretical research). However, a low Kappa value of 0.179 suggests a very low level of reliability of our conclusion.

The test of proportion for our third conjecture accepted the null hypothesis ( $z$  value = 1.0106,  $p$  value = 0.31250) at the 5% level of significance. This finding means that Zimmerman's concern with the lack of incentive to conduct non-descriptive research is still a major reason for the slow progress of management accounting research. The test results for inter-rater agreement reveal agreements in 33 cases (57.9%). This agreement level is modest. Taken together, both tests show that Zimmerman's concern with the lack of incentive as a reason for the poor advance of management accounting research is still valid after 12 years of research and practice in management accounting. However, the Kappa value (0.097) suggests a low reliability of our conclusion.

The test of proportion for our fourth conjecture accepted the null hypothesis ( $z$  value = 1.3223,  $p$  value = 0.18684) at the 5% level of significance. Therefore, Zimmerman's (2001) concern about the lack of the use of non-economics-based theories is still a major reason for the slow progress of management accounting research. The test results for inter-rater agreement reveal agreements in 48 cases (84.2%). This agreement level is very high. Taken together, both tests show that Zimmerman's (2001) concern with researchers' inclination to rely on economics-based frameworks and theories and the lack of a critical mass of researchers trained in other theories are reasons for the slow advancement of management accounting research.

This conclusion, validated by the Cohen's test ( $Kappa = 0.452$ ) is modest and more reliable than the Kappa values calculated for the previous three conjectures. Therefore, we can conclude that based on all three statistical used, management accounting still lacks research using other theories. This lack of other theories retards the advancement of management accounting research 13 years after the publication of Zimmerman's work.

The test of proportion for our fifth conjecture was accepted at the 5% level of significance ( $z$  value =  $-0.6819$ ,  $p$  value =  $0.4965$ ). The acceptance of the null hypothesis suggests that management accounting research is still divided between theoretical and empirical researchers. The test scores for inter-rater agreement (38 cases of agreements, 66.7%) suggest the strong validity of our conclusion. The Kappa value of this conjecture, 0.209, is also modest. Therefore, we can conclude that management accounting research has not progressed because of the divide between theoretical and empirical researchers as two distinct groups. In 2001, Zimmerman observed this divide as a reason for the slow development of management accounting research and theory; as of 2013, the same divide still exists. Therefore, our test statistics confirms that management accounting research has not progressed and that management accounting as a discipline still lacks a systematic body of knowledge.

The test of proportion for our sixth conjecture rejected the null hypothesis at the 5% level of significance ( $z$  value =  $2.6967$ ,  $p$  value =  $0.00694$ ). Therefore, management accounting researchers are engaged in research other than decision-focused research. The test score for inter-rater agreement (33 cases of agreement, 57.9%) reinforces the validity of our hypothesis. The Kappa value (0.032) is close to zero. A Kappa value close to zero indicates a nearly perfect disagreement between two raters. Taken together, the test statistics suggests mixed results. The first two statistics suggest that management accounting research has progressed in areas other than decision making, but the Kappa test statistics suggests that the researchers were significantly divided in their opinions on this conjecture.

## **CONCLUSIONS**

We attempted to update the progress of management accounting research since Zimmerman's account in 2001 of the status of this field. We assumed a causal association between Zimmerman's work and the citations of his paper. To this end, we developed six hypotheses based on the six conjectures in Zimmerman's work. To improve the credibility of our findings and conclusions, we used three test statistics: a test of proportions for hypothesis testing, a test of inter-rater agreement, and Cohen's test (Kappa value) of reliability. The results show the acceptance of three null hypotheses and the rejection of three hypotheses.

We found that management accounting has advanced since 2001 because its researchers have used other data sources and research methods, including survey and archival data (conjecture one). Management accounting researchers are no longer exclusively engaged in descriptive research (conjecture two). Moreover, management accounting researchers have investigated areas other than decision making since 2001 (conjecture six). Therefore, three of the six conjectures suggest some progress in management accounting research since 2001.

We found no support for three of the six conjectures (conjectures three, four, and five). We observed that management accounting researchers still report descriptive research. Zimmerman offered this phenomenon as a reason for the slow progress of management accounting as a discipline and a systematic body of knowledge (conjecture three). By 2013, the situation had not changed. We found that for economic and institutional reasons and the expectations of the professional bodies, the incentive for academic and practicing researchers in 2001 was to publish descriptive research. Moreover, researchers still use economics-based theories for management accounting research (conjecture four). Therefore, a critical mass of researchers does not use other theories in their management accounting research. We still found a divide between theoretical and empirical researchers (conjecture five). Therefore, Zimmerman's observation in 2001 and our finding in 2013 both suggest that management accounting research has not advanced because of the absence of holistic approaches (theory/model and building/model testing) by individual or team-based researchers.

Our study has a number of limitations. First, we only examined 57 directly cited papers (from the Scopus database) and did not examine other broader databases (e.g., Google Scholar). Second, we used only two raters to rate the abstracts by the key themes of Zimmerman's conjectures. The raters' perceptions on the papers and their scoring could have contributed to errors of judgment and thus to the results reported. We did not test co-relations among the conjectures that could have improved the generalizability of our results. Third, we did not profile the publication sources. Zimmerman's paper was based on his research on North America. Therefore, the conclusions reached in our study should be accepted with caution.

This study is exploratory and can be furthered in a number of ways. Using three raters with backgrounds in management accounting research and practice may improve the validity and reliability of the results. The sample size can be increased to include co-citations (indirect citations of directly cited papers) and can be studied for improved generalizability and reliability. Further statistical testing (co-relation) can be conducted to reinforce the conclusions.

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## **REFERENCES**

Abdel-Kader, M. & Luther, R. (2006). Management accounting practices in the British food and drinks industry. *British Food Journal*, 108; 336-357.

- Berry, K. J. & Mielke, P. W. (1988). A generalization of Cohen's Kappa agreement measure to interval measurement and multiple raters. *Educational and Psychological Measurement*, 48; 921-933.
- Bhimani, A. (2002). European management accounting research: traditions in the making. *European Accounting Review*, 11; 99-117.
- Birnberg, J. G., Luft, J. & Shields, M. D. (2006). Psychology theory in management accounting research. *Handbooks of Management Accounting Research*, 1; 113-135.
- Brierley, J. A. (2008). Toward an understanding of the sophistication of product costing systems. *Journal of Management Accounting Research*, 20; 61-78.
- Brown, R. & Brignall, S. (2007). Reflections on the use of a dual-methodology research design to evaluate accounting and management practice in UK university central administrative services. *Management Accounting Research*, 18; 32-48.
- Burkert, M. & Lueg, R. (2013). Differences in the sophistication of Value-based Management - The role of top executives. *Management Accounting Research*, 24; 3-22.
- Byrne, S. (2010). *Antecedents, characteristics, and consequences associated with the roles of management accountants, and assisting managers in their roles*. Dublin City University.
- Chenhall, R. H. (2012). Developing an organizational perspective to management accounting. *Journal of Management Accounting Research*, 24; 65-76.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20; 37-46.
- Corbin, J. M. & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, 13, 3-21.

- Demski, J. S. & Zimmerman, J. L. (2000). On “Research vs. Teaching”: A long-term perspective. *Accounting Horizons*, 14, 343-352.
- Hansen, A. (2011). Relating performative and ostensive management accounting research: Reflections on case study methodology. *Qualitative Research in Accounting and Management*, 8; 108-138.
- Hemmer, T. & Labro, E. (2008). On the optimal relation between the properties of managerial and financial reporting systems. *Journal of Accounting Research*, 46; 1209-1240.
- Hopwood, A. (2002). ‘If only there were simple solutions, but there aren’t’: some reflections on Zimmerman’s critique of empirical management accounting research. *European Accounting Review*, 11; 777-785.
- Ittner, C. D. & Larcker, D. F. (2001). Assessing empirical research in managerial accounting: a value-based management perspective. *Journal of accounting and economics*, 32; 349-410.
- Lazear, E. P. (2000). Economic imperialism. *The Quarterly Journal of Economics*, 115; 99-146.
- Locke, J. & Lowe, A. (2008). Evidence and implications of multiple paradigms in accounting knowledge production. *European Accounting Review*, 17; 161-191.
- Locke, K. (2001). *Grounded theory in management research*, Sage.
- Lukka, K. (2002). Debate Forum on Zimmerman’s conjectures on management accounting research. *European Accounting Review*, 11; 775-775.
- Riahi-Belkaoui, A. (1980). *Conceptual foundations of management accounting*, Addison-Wesley Publishing Company.
- Sim, J. & Wright, C. C. (2005). The Kappa statistic in reliability studies: use, interpretation, and sample size requirements. *Physical therapy*, 85; 257-268.

- Tessier, S. & Otley, D. (2012b). A conceptual development of Simons' Levers of Control framework. *Management Accounting Research*, 23; 171-185.
- Van Der Meer-Kooistra, J. & Vosselman, E. (2012). Research paradigms, theoretical pluralism and the practical relevance of management accounting knowledge. *Qualitative Research in Accounting and Management*, 9; 245-264.
- Warrens, M. J. (2010). Inequalities between multi-rater Kappas. *Advances in data analysis and classification*, 4; 271-286.
- Zimmerman, J. L. (2001). Conjectures regarding empirical managerial accounting research. *Journal of accounting and economics*, 32; 411-427.